

**Claims**

1. A filter for an open system interconnection layer2 traffic separation in at least one Access Switching Router (42, 44) in a network (40), having ports in the routers 5 (42, 44) configured to the same virtual local area network, said filter filtering data packet traffic to said ports, **characterized** in that it comprises:

means for intercepting layer2 traffic from a network connected source device (HostA, HostB) for a Media Access Control address belonging to said virtual local area network, determining if traffic is permitted to be forwarded to other ports;

10 means for intercepting Address Resolution Protocol broadcasts in such traffic, responding to said broadcast to said source device(HostA, HostB) regardless of if a destination device layer2 domain is the same as source device layer2 domain, said source device (HostA, HostB) thus determining that the broadcast has acknowledged the layer2 address of a sought destination device (HostC, HostD), whereby the source device (HostA, 15 HostB) transmits data packets to the destination device (HostC, HostD), said routers receiving said transmitted data packets;

means for determining the egress port to said destination device;

means for determining the layer2 address of said destination device (HostC, HostD);

20 means for adjusting the layer2 header from said received data packet, said means for setting the source layer2 address, setting said routers source address for the data packets, said means for determining the layer2 address of the destination device (HostC, HostD), setting the destination layer2 address to that of the destination device (HostC, HostD) , transmitting the data packet to the destination device (HostC, HostD); and

25 thus simulating that if the source device (HostA, HostB) and destination device (HostC, HostD) is in the same layer2 domain, the router layer2 address is the actual destination address both for the source and destination device, or simulating that if the source device and destination device are not in the same layer2 domain but in the same layer3 subnet, the router layer2 address is the actual destination layer2 address for the source to the 30 destination.

2. A filter according to claim 1, **characterized** in that a port that resides in a sub router (42, 44) is provided with said routers (42, 44) layer2 address when addressing the destination device (HostC).

3. A filter according to claims 1 or 2, **characterized** in that the router (42, 44) is investigating the source and/or destination address to determine the best exit port for the packet, to determine if the packet is in profile for rate-limiting, or to do other filtering based on information in the open system interconnection layer3 and higher protocol layers.

5 4. A filter according to claims 1-3, **characterized** in that a router (42, 44) is a combination of a layer2 switch and a layer3 router, combining the capabilities of layer2 switching with advanced packet control and forwarding decisions in a layer3 router.

5 10 5. A filter according to claims 1-4, **characterized** in that it is providing the use of one IP subnet, spreading it over several premises and a multiple of Access Switching Router and the same subnet in multiple layer2 domains, whereby it is covering more customers.

15 6. A filter according to claim 5, **characterized** in that it is providing a customer having multiple computers to receive more addresses.

7. A method for a filter for an open system interconnection layer2 traffic separation in at least one Access Switching Router (42, 44) in a network (40), having ports in the routers (42, 44) configured to the same virtual local area network, said filter filtering data packet traffic to said ports, **characterized** in that it comprises:

15 20 intercepting layer2 traffic from a network connected source device (HostA, HostB) for a Media Access Control address belonging to said virtual local area network, determining if traffic is permitted to be forwarded to other ports;

intercepting Address Resolution Protocol broadcasts in such traffic, responding to said broadcast to said source device (HostA, HostB) regardless of if a destination device layer2 domain is the same as source device layer2 domain, said source device (HostA, HostB) thus determining that the broadcast has acknowledged the layer2 address of a sought 25 destination device (HostC, HostD), whereby the source device (HostA, HostB) transmits data packets to the destination device (HostC, HostD), said routers receiving said transmitted data packets;

30 determining the egress port to said destination device; determining the layer2 address of said destination device (HostC, HostD); adjusting the layer2 header from said received data packet, said means for setting the source layer2 address, setting said routers source address for the data packets, said means for determining the layer2 address of the destination device (HostC, HostD), setting the destination layer2 address to that of the destination device (HostC, HostD), transmitting the data packet to the destination device (HostC, HostD); and

thus simulating that if the source device (HostA, HostB) and destination device (HostC, HostD) is in the same layer2 domain, the router layer2 address is the actual destination address both for the source and destination device, or simulating that if the source device and destination device are not in the same layer2 domain but in the same layer3 subnet,  
5 the router layer2 address is the actual destination layer2 address for the source to the destination.

8. A method for a filter according to claim 7, **characterized** in that a port that resides in a sub router (42, 44) is provided with said routers (42, 44) layer2 address when addressing the destination device (HostC).

10 9. A method for a filter according to claims 7 or 8, **characterized** in that a router (42, 44) is investigating the source and/or destination address to determine the best exit port for the packet, to determine if the packet is in profile for rate-limiting, or to do other filtering based on information in the open system interconnection layer3 and higher protocol layers.

15 10. A method for a filter according to claims 7-9, **characterized** in that a router (42, 44) is a combination of a layer2 switch and a layer3 router, combining the capabilities of layer2 switching with advanced packet control and forwarding decisions in a layer3 router.

11. A method for a filter according to claims 7-10, **characterized** in that it is  
20 providing the use of one IP subnet, spreading it over several premises and a multiple of Access Switching Router and the same subnet in multiple layer2 domains, whereby it is covering more customers.

12. A method for a filter according to claim 11, **characterized** in that it is providing a customer having multiple computers to receive more addresses.

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